## II. Remarks

Claims 1, 3 through 8, 11 through 15 and 18 through 22 are pending in the application. Claims 2, 9, 10, 16, 17 and 23 have previously been cancelled. Claims 1, 15 and 18 have been amended. New claims 24 through 26 have been added. Thus, claims 1, 3 through 8, 11 through 15, and 18 through 22 and 24 through 26 remain under consideration.

### Rejections Under 35 U.S.C. § 112

Claims 1, 3 through 7 and 18 was rejected under 35 U.S.C § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner noted that the expression "said second piston" appearing in claim 1 had no antecedent basis. This expression has been amended to correctly recite "said annular piston" and this basis of rejection of claims 1 and 3 through 7 has been overcome. This same correction has been undertaken in claim 15. Claim 18 has been amended to recite dependency upon independent claim 15. Accordingly, all rejections under 35 U.S.C. 112, second paragraph, have been addressed and resolved.

### Rejections Under 35 USC § 103

Claims 1, 3, 5 through 8, and 12 through 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,595,338 issued to Bansbach et al. (Bansbach) in view of U.S. Patent No. 5,611,407 issued to Maehara et al. (Maehara).



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PO Box 10395
Chicago, IL 60611-5599

Bansbach teaches a torque transfer clutch with a hydraulic actuator. The device of Bansbach is incorporated into a transfer case. That is, the hydraulic pressure generator (the motor driven ball screw assembly) is attached to a transfer case having a conventional friction pack clutch disposed about the primary output shaft of the transfer case. The friction clutch pack is actuated by one or a plurality of pistons disposed about the primary output shaft which are acted upon by the pressurized hydraulic fluid provided by the ball screw assembly. From the outset, therefore, it is apparent that the Bansbach device is not the type of unitary or self-contained device disclosed and claimed by Applicants.

Applicants device is a compact assembly having input and output members, annular slave piston and friction clutch pack disposed about one axis and a bi-directional electric motor, a gear train and ball screw assembly disposed along axes normal to the just recited axis. The resulting package is both compact, and, as noted in the claims, contained within a single housing or unitary. The Bansbach device, configured as it is to include a conventional clutch within a transfer case and having an electric motor drive and ball screw assembly disposed on the outside of a transfer case, can hardly be considered unitary.

The Examiner has combined this reference with the patent to Maehara et al. The teachings of Maehara et al. relevant to this rejection is the hydraulic pressure supply device illustrated in Figure 12(a). The Examiner relies upon this device for its teaching of an anti-back driving clutch and search:

> It would have been obvious to provide a means for inhibiting back driving of the motor 92 in Bansbach et al., as taught by Maehara et al., the motivation being to make it unnecessary to constantly apply pressure to maintain clutch engagement.



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At the outset, it should be noted that in the devices disclosed, it is very much necessary to constantly apply pressure to maintain clutch engagement. With anti-back drive device, however, it may not be necessary to apply electric power to maintain clutch engagement.

This rejection presents a common obviousness rejection wherein certain claimed elements are found in the prior art. What is lacking in the rejection, however, is any explicit or implicit suggestion to combine or modify one reference with the other. Moreover, there is nothing in the references that indicates or reveals a reasonable expectation of success. In re Vaeck, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991)

Applicants' attorney has carefully reviewed the cited prior art references with regard to suggestions to combine or modify. Note the following text paragraph which appears in column 6 of Bansbach:

> In view of the above arrangement, rotor shaft 116 acts as the input to the ball-screw yielding a mechanically simple system that eliminates more complex mechanical designs generally used in the art that include a plurality of gears and/or linkages. As each of the mechanical components of the actuator contain friction elements, the elimination of the actuator contain friction elements, the elimination of some of these components and the more simple design provided by the present invention reduces the overall friction and therefore increases the efficiency of the assembly. Increased efficiency is translated into more economical clutch actuation electric motors and more accurate clutch torque estimation. Those skilled in the art will appreciate that a variety of electric motors may be used including a DC brush, DC brushless, and stepper motors.

This is the only relevant language suggesting modifications in Bansbach and, because it emphasizes and encourages simplicity and adjusting the piston configurations, i.e., areas, to adjust mechanical advantage, it is clear that nothing in



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Bansbach suggest its combination or modification with a one-way or anti-back drive feature. In fact, a fair characterization of the quoted language of Bansbach is that it teaches away from any such additional complexity and drive components. Applicants' attorney submits that this situation is a result of the overall operating system and capabilities of the transfer case and the fact that no fail safe or power failure mode was necessary or contemplated.

A search of Maehara reveals a similar lack of suggestion to modify or combine. Accordingly, the obviousness rejection should not stand and the subject claims are patentable.

Claims 4 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bansbach et al. in view of Maehara et al. as applied to claims 1, 3 5 through 8 and 12 through 14 above, and further in view of U.S. Publication No. 2002/0162328 A1 of Shaw et al. (Shaw).

Bansbach et al. and Maehara et al. have been discussed above and the remarks distinguishing them from the claims at issue are hereby incorporated by reference. Shaw et al. teaches an apparatus and method for actuating and controlling the clutch of a transfer case. Two embodiments are taught. The system of Figures 1 and 3 appears to utilize pressurized hydraulic fluid from a braking system. In Figure 2, a motor single, a pinion and spur gear gear train, a lead screw and a piston which appear to be similar to Bansbach are utilized As noted previously, Shaw's disclosure is of an abbreviated nature and presents in limited fashion various driveline and transfer case control schemes. The configuration of Figure 2 utilizes a shuttle or spool valve 180 which is driven by the output of a



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Chicago, IL 60611-5599

hydraulic pump to adjust the range selector 178. Shaw discloses a pressure sensor 174 which is utilized in conjunction with a feedback or control device 176 which is associated with the drive motor 146. The Examiner asserts that:

> It would have been obvious to carry this teaching to Bansbach et al. in view of Maehara et al., providing a pressure sensor therein for the purpose of protecting the system from overpressure.

This assertion does not appear to be supported by Shaw as nowhere is it taught in Shaw that the sensor 174 is utilized as an overpressure protection. Similarly, Applicants disclose no purpose for the sensor, there being no statement or assertion of protection of the system from overpressure or any other operational aspect. Additionally, Shaw discloses virtually nothing regarding the physical arrangement of its components. Only the Examiner's hindsight reconstruction of Applicant's claimed device renders Shaw meaningful. Given the distinctions between the Shaw hydraulic system and the other references with which it must be combined, it is apparent that the hindsight rejection is not consistent with a proper interpretation of obviousness under 35 U.S.C. §103(a) and that claims 4 and 11 should be allowed.

Claims 15, 18 and 20 through 22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bansbach et al. in view of Maehara et al. as applied to claims 1, 3, 5 through 8 and 12 through 14 above, and further in view of Takeyama.

The rejection is respectfully controverted. Bansbach and Maehara have been discussed above. Takeyama discloses an electric drive for a hydraulic master cylinder. In Takeyama, a bi-directional electric motor drives a rotating threaded shaft through a gear train to translate it bi-directionally. The Examiner alleges that Takeyama taken with Bansbach and Maehara render claims 15, 18, 20, 21 and 22



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Chicago, IL 60611-5599

obvious but appears to overlook the hindsight and patchwork nature of the rejection. Bansbach utilizes direct and single gear interface drive without an anti-back drive device. Maehara utilizes only a direct drive but with an anti-backlash device. Takeyama utilizes no anti-back drive device but a multiple gear train. Given these variations, it is difficult to find a pattern that supports the Examiner's assertions of obviousness. The most apparent reading is that additional gears and a significant speed reduction obviate the need for an anti-back drive device. Stated oppositely, a direct drive supports the need for an anti-back drive device. Nonetheless, Applicants' claimed device utilizes both a gear train and an anti-back drive device which is different from the combined teachings of the references. The references teach away from Applicants' claimed device. Clearly, therefore, Takeyama does not cure the defects of the Bansbach and Maehara references and claims 15, 18, 20, 21 and 22 are not obvious under a proper interpretation of 35 U.S.C. §103(a) and should be allowed.

Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bansbach in view of Maehara and Takeyama as applied to claims 15, 18 and 20 through 22 above, and further in view of Shaw.

The combination of Bansbach, Maehara, Takeyama and Shaw in support of a rejection of dependent claims 4 and 11 has been discussed and responded to above. Such discussion is hereby incorporated by reference and supports the patentability of dependent claim 19.



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PO Box 10395
Chicago, IL 60611-5599

**SUMMARY**

Pending Claims 1, 3 through 8, 11 through 15, and 18 through 22 as amended are patentable. Applicants respectfully request the Examiner grant allowance of these claims. Alternatively, entry of this Amendment under the provisions of 37 C.F.R. §1.116 in order to place this application in better form for consideration on appeal is requested. The Examiner is invited to contact the undersigned attorneys for the Applicants via telephone if such communication would expedite this application.

Respectfully submitted,

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Date

David D. Murray (Reg. No. 23,647)
Attorney for Applicants



BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60611-5599